

Application No. 10/707,999
Docket No. A4-1719
Amendment dated February 19, 2007
Reply to Office Action of October 19, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently amended): A product consisting essentially of polycrystalline chips and optionally a matrix in which the chips are dispersed, the polycrystalline chips having nanocrystalline microstructures ~~—having grains with a nominal size of about 30 to less than 500 nm—~~ and being formed of a material chosen from the group consisting of metals, metal alloys, intermetallic materials, and ceramic materials, the matrix if present being formed of a material chosen from the group consisting of metal, metal alloy, intermetallic materials, polymeric materials, and ceramic materials;

wherein the chips are produced by a machining operation so as to be characterized primarily by plane strain deformation and in the form of particulates, ribbons, wires, filaments, and/or platelets;

wherein if the product consists essentially of the chips, the chips are held together by consolidation and sintering and the product is a monolithic

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material consisting essentially of a nanocrystalline microstructure; and
wherein if the product consists essentially of the chips dispersed in the matrix material, the product is a composite material.

Claim 2 (Previously presented): A product according to claim 1, wherein the material of which the chips are formed is chosen from the group consisting of metal, metal alloy and intermetallic materials.

Claim 3 (Withdrawn): A product according to claim 1, wherein the material of which the chips are formed is a ceramic material.

Claim 4 (Original): A product according to claim 1, wherein the chips have grains with a nominal size of less than 500 nm.

Claim 5 (Canceled):

Claim 6 (Original): A product according to claim 1, wherein the product consists essentially of the chips held together by consolidation so that the product consists essentially of a nanocrystalline microstructure.

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Claim 7 (Withdrawn): A product according to claim 1, wherein the product is a composite material and consists essentially of the chips dispersed in the matrix.

Claim 8 (Withdrawn): A product according to claim 7, wherein the chips are present in the matrix in the form of ribbons, wires or filaments.

Claim 9 (Withdrawn): A product according to claim 7, wherein the chips are in the form of platelets.

Claim 10 (Withdrawn): A product according to claim 7, wherein the material of the matrix is chosen from the group consisting of metal, metal alloy and intermetallic materials.

Claim 11 (Withdrawn): A product according to claim 7, wherein the material of the matrix is a polymeric material.

Claim 12 (Withdrawn): A product according to claim 7, wherein the material of the matrix is a ceramic material.

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Claim 13 (Currently amended): A product consisting essentially of polycrystalline chips produced by a machining operation so as to be characterized primarily by plane strain deformation and in the form of particulates, ribbons, wires, filaments, and/or platelets, held together by consolidation and sintering, the chips having nanocrystalline microstructures consisting entirely of grains with a nominal size of about 30 to less than 500 nm so that the product consists essentially of a nanocrystalline microstructure, the chips being formed of a material chosen from the group consisting of metals, metal alloys, intermetallic materials, and ceramic materials.

Claim 14 (Original): A product according to claim 13, wherein the chips are formed of a material chosen from the group consisting of metal, metal alloy and intermetallic materials.

Claim 15 (Withdrawn): A product according to claim 13, wherein the chips are formed of an inorganic material chosen from the group consisting of ceramic materials.

Claim 16 (Original): A product according to claim 13, wherein the

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grains of the chips have a nominal size of less than 300 nm.

Claim 17 (Withdrawn-currently amended): A product comprising polycrystalline chips dispersed in a matrix, the chips being produced by a machining operation so as to be characterized primarily by plane strain deformation and in the form of particulates, ribbons, wires, filaments and/or platelets that consist entirely of grains with a nominal size of about 30 to less than 500 nm, the chips being formed of a material chosen from the group consisting of metals, metal alloys, intermetallic materials, and ceramic materials, the matrix being formed of a material chosen from the group consisting of metal, metal alloy, intermetallic materials, polymeric materials, and ceramic materials.

Claim 18 (Withdrawn): A product according to claim 17, wherein the chips are formed of a material chosen from the group consisting of metal, metal alloy and intermetallic materials.

Claim 19 (Withdrawn): A product according to claim 17, wherein the chips are formed of an inorganic material chosen from the group consisting of

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ceramic materials.

Claim 20 (Withdrawn): A product according to claim 17, wherein the grains of the chips have a nominal size of less than 300 nm.

Claim 21 (Withdrawn): A product according to claim 17, wherein the chips are in the form of particles or platelets.

Claim 22 (Withdrawn): A product according to claim 17, wherein the chips are in the form of ribbons, wires or filaments.

Claim 23 (Withdrawn): A product according to claim 17, wherein the matrix is formed of a material chosen from the group consisting of metal, metal alloy and intermetallic materials.

Claim 24 (Withdrawn): A product according to claim 17, wherein the matrix is formed of a polymeric material.

Claim 25 (Withdrawn): A product according to claim 17, wherein the

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matrix is formed of an inorganic material chosen from the group consisting of
ceramic materials.